

Remarks

The Rejection of Claims 1-10 Under 35 U.S.C. §103(a)

The Examiner rejected Claims 1-10 under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 5,829,509 (Crafton) in view of United States Patent No. 6,224,654 (Chawla).

Claims 1, 5, 6, and 10 each recite, in a thermal sand removing oven, an air moving means, a recirculating air stream, and a plurality of sand removal members. In accordance with the first requirement for a *prima facie* case of obviousness, the references themselves must suggest a reason to either modify a reference, or the knowledge generally must provide a motivation to modify the references in such a way as to make the claimed invention. However, there is no motivation to combine the two above-mentioned references for the purposes of obviousness analysis. As cited in the first six lines of the Crofton Abstract: "Provided is a five-in-one process/integrated furnace system that (i) receives and heat treats a casting, (ii) removes sand core materials from the casting, (iii) *actively reclaims sand from the sand core materials* (emphasis added), (iv) substantially cools the reclaimed sand, and (v) removes fines from the reclaimed sand." In col. 4 lines 16-25, Crafton states: "The heating chamber 22, 22' receives and heats castings and the cores therein (that are acceptably transported through the heating chamber 22, 22' in, for example, baskets 26a,b), dislodges sand core materials 28 from the castings, and actively *reclaims sand from the sand core materials 28* (emphasis added). In the most preferred embodiments, the heating chamber 22, 22' also heat treats the castings. The reclaiming is carried out, at least in part, in a hot fluidized bed 32, 32' that is preferably disposed within the heating chamber 22, 22'." Thus, Crafton is addressing the problem of reclaiming sand from sand core materials in a high-temperature furnace using a fluidized bed. That is, preventing sand from exiting a furnace or oven. The materials that Crafton is addressing have already dropped out of the air streams in the heating chamber. Crafton contains no reference to the movement of air within the furnace, damage to an air moving means from sand entrained in a recirculating air stream, or separation of sand within a recirculating air stream. Therefore, Crafton cannot and

does not contain any suggestion or motivation to perform any type of sand separation in a recirculating air stream inside a furnace.

In contrast, the present invention is addressing the problem of separating sand from an air stream within an oven to prevent damage to air moving means within the oven. Alternately stated, the present invention is addressing a problem in a closed loop system, while Crafton is addressing a problem in an open loop system (materials exiting an oven). Thus, Crafton is addressing a different problem than the present invention.

Chawla is addressing the problem of dust removal from relatively lower-temperature chimney gases, which is very different than the problem addressed by the present invention. Chawla is addressing an open loop problem, namely, reducing the amount of dust exiting a system. Chawla is only interested in gases leaving a system and is indifferent to the type of activity that results in the chimney gases or any problems associated with movement of the gases prior to exiting a system. Chawla contains no reference to furnaces, recirculating air streams within a furnace, damage to an air moving means from sand entrained in a recirculating air stream, or separation of sand within a recirculating air stream. Therefore, Chawla cannot and does not contain any suggestion or motivation to perform any type of sand separation within the atmosphere inside a furnace. Chawla's focus on lower-temperature applications is shown in col. 2, lines 54,55, which state: "The plates 12 may be made of metal or *plastic* (emphasis added)..." Clearly, plastic in a thermal sand removal oven would be entirely inappropriate.

Crafton should not be combined with Chawla. Applicants respectfully submit that the combination of Crafton and Chawla is based on hindsight since the two references are addressing problems different from each other and from the problem solved by the present invention. Further, these references contain no suggestion or motivation to combine one with the other.

Further, the Office Action has not demonstrated that the modification of the cited prior art references point to the reasonable expectation of success in the present invention, which is the second requirement of the obviousness analysis. That is, even when combined, the two prior art references do not point to a process that removes sand from a separate, return air stream in a

thermal sand removal oven. For example, the high temperatures of a thermal sand removal oven would preclude any hope of success for the plastic mechanism disclosed in Chawla.

Crafton in combination with Chawla does not suggest a modification that discloses the features of the invention of Claims 1, 5, 6, or 10. Claims 2 through 4, dependent from Claim 1, also benefit from the above-mentioned distinction. Claims 7 through 9, dependent from Claim 6, also benefit from the above-mentioned distinction. Since the combination of Crafton and Chawla does not suggest all the elements of the claimed invention, the Examiner is requested to withdraw the rejection.

Applicants respectfully disagree with the Examiners characterization of Chawla. Chawla does not disclose the “V” shaped structure recited in Claims 2 and 7. Instead, as shown in Figure 1 of Chawla, Chawla discloses a series of parallel plates, none of which are joined to form a “V” shape. In col. 2, lines 36-38, Chawla states: “FIG. 1 shows a Multiwir packaging consisting of layers 10 of *parallel* (emphasis added) plates 12 that *crisscross* (emphasis added).” The “V” shape of the present invention includes a vertex, where the two member forming the shape are joined, extending the length of the two members. However, the crisscrossing in Chawla results in an edgewise connection, at respective single points, of plates from adjacent sets of parallel plates. The edgewise connection does not form the vertex of the present invention “V” shape. Applicants further disagree with the Examiner’s assessment of col. 2, lines 48-50 in Chawla, which state: “Note that in the preferred embodiment of the invention, one set of parallel plates 100 is *inclined* (emphasis added) 45 degrees in an upward angle, and the *adjacent* (emphasis added) parallel plate 104 is *inclined* (emphasis added) at -45 degrees at a downward angle.” There is no mention of joining planar members at 45 degrees. As noted above, in Chawla, adjacent sets of parallel plates are joined at respective single points only along edges. Thus, the arrangement disclosed by Chawla is nothing like the “V” shaped structure disclosed in Claims 2 and 7.

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Conclusion

Applicant respectfully submits that all pending claims are now in condition for allowance, which action is courteously requested.

Respectfully submitted,



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